PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT-159	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/EP2004/002512	International filing date *(day/month/year)* 08.03.2004	Priority date *(day/month/year)* 28.03.2003
International Patent Classification (IPC) or national classification and IPC H01B7/00, H01B7/04, H01B5/00, D07B1/06, D07B1/08, D07B1/10		
Applicant GRUPO GENERAL CABLE SISTEMAS, S.A. et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☐ *sent to the applicant and to the International Bureau)* a total of sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☒	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
26.07.2004	13.05.2005
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Wengeler, H Telephone No. +31 70 340-1936

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/002512

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages	
1-4	as originally filed
Claims, Numbers	
1-19	received on 26.01.2005 with letter of 24.01.2005
Drawings, Figures	
1	as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/002512

Box No. II Priority

1. ☒ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:
   ☒ copy of the earlier application whose priority has been claimed (Rule 66.7(a)).
   ☐ translation of the earlier application whose priority has been claimed (Rule 66.7(b)).

2. ☐ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary: Fecha recepción doc prioridad 20/4/04
   ver form PCT/IB/304

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-19
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-19
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-19
	No:	Claims	

2. Citations and explanations (Rule 70.7):

   see separate sheet

For an assessment of novelty and inventive step the following document is presently deemed to be relevant:

D1: US-A-4 550 559

1. Amendments (Art. 19 PCT)

The amendments made to the claims are allowable under Art. 19 PCT.

2. Novelty (Art. 33(2)PCT)

Fig 7 in D1 refers to a cable comprising a central strand and six outer strands around the central strand. The outer strands have polygonal cross-sections having two straight lines and one curved side (col. 5, l. 26- col. 6, l. 68). Cables having no central strand are also possible. In this case the side surfaces (16) of the sheath (20) (see Fig 3) "may converge to a point (col. 3, l. 34-40). In one form of the cable (col. 5, l. 34-45) each strand is made up of a plurality of filaments "of an organic polyamide". However other filament materials can be used as well, such as e.g. steel wires (col. 7, l. 19-29).
The cables of D1 are used as traction cables, e.g. with pulleys (col. 4, l.23).

The subject-matter of claim 1 is distinguished from D1 in that it refers to electric/communication cables having a cross section according to Fig 1.

3. Inventive step (Art. 33 (3) PCT)

None of the prior art documents available from the Search Report disclose or allude to the claimed cable structure. Hence, an inventive step may be acknowledged.

(63)

CLAIMS

~~1.~~ Metallic conductor <u>for electric and/or communication cable</u> that comprises a collected assembly of wires (22); **characterized** in that conductor (21) assumes a predetermined polygonal cross-section <u>comprising one curved side</u>.

~~2.~~ Conductor according to Claim 1, in which the polygonal cross-section ~~has~~ <u>comprising</u> at least one straight side.

~~3. Conductor according to Claim 1, in which the polygonal cross-section has at least one curved side.~~

~~4.~~ ~~C~~ 3. Conductor according to any one of Claims 2 ~~to 3~~, in which the polygonal cross-section ~~has~~ <u>comprising</u> a combination of at least one straight side and one curved side.

~~5.~~ 4. Conductor according to Claim ~~4~~ <u>3</u>, in which the polygonal cross-section is a circular sector.

~~6.~~ 5. Conductor according to any one of the preceding claims, in which the diameter of each wire (22) is less than or equal to 0.61 mm.

~~7.~~ 6. Conductor according to any one of the preceding claims, in which the conductor (21) is surrounded by a layer of an insulating material.

~~8.~~ 7. Conductor according to Claim ~~7~~ <u>6</u>, in which the layer of insulating material is thermoplastic and/or thermosetting, such as polyethylene, polyester, fluorinated polymer, polyolefin, polyamide, polyimide, polyurethane, polyvinyl chloride, thermoplastic elastomer, ethylene-propylene, polychloroprene or silicone rubber, as well as their compounds and derivatives.

~~9.~~ 8. <u>Electric and/or communication</u> cable that comprises a plurality of conductors (21) according to claim 1, electrically insulated from one another, and in their turn grouped together by a cabling process under a covering or a common binding element, **characterized** in that the conductors (21) assume a predetermined polygonal arrangement <u>comprising a curved side</u>.

~~10.~~ 9. Cable according to Claim ~~9~~ <u>8</u>, in which the predetermined polygonal arrangement includes at least one straight side.

~~11. Cable according to Claim 9, in which the predetermined polygonal~~

~~arrangement includes at least one curved side.~~

~~12.~~ 10. Cable according to any one of Claims ~~10 to 11~~ 9, in which the predetermined polygonal arrangement includes a combination of at least one straight side and one curved side.

~~13.~~ 11. Cable according to Claim ~~9~~ 8, in which the predetermined polygonal arrangement is a circle.

~~14.~~ 12. Cable according to Claim ~~9~~ 8, in which the predetermined polygonal arrangement is a rectangle.

~~15.~~ 13. Cable according to any one of Claims ~~13 to 14~~ 11 to 12, in which the cable (23) comprises conductors (21) of different polygonal cross-sections.

~~16.~~ 14. Cable according to Claim ~~9~~ 8, in which the predetermined polygonal arrangement is surrounded by at least one layer of a protective material.

~~17.~~ 15. Cable according to Claim ~~16~~ 14, in which the layer of protective material is a metallic protective material.

~~18.~~ 16. Cable according to Claim ~~16~~ 15, in which the layer of protective material is a thermoplastic and/or thermosetting polymeric protective material.

~~19.~~ 17. Cable according to Claim ~~16~~ 14, in which the layer of protective material is a textile material applied in the form of a protective belt.

~~20.~~ 18. Cable according to any one of the Claims ~~17 to 19~~ 15 to 17, in which the predetermined polygonal arrangement is surrounded by a combination of layers of protective material.

~~21.~~ 19. Method of manufacture of a metallic conductor (21) according to Claim 1, characterized in that the method comprises at least the stages of:

- Deformation, using a mechanical means of deformation, of a metallic conductor (21) that comprises an assembly of round metallic wires (22) for achieving the predetermined polygonal cross-section, and
- Extrusion, using an extrusion means, of the metallic conductor (21) obtained in the preceding operation.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/002512

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01B7/00 H01B7/04 H01B5/00 D07B1/06 D07B1/08
D07B1/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H01B D07B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 550 559 A (THOMSON IAN M) 5 November 1985 (1985-11-05) column 2, lines 12-16,36-47 column 2, line 65 - column 3, line 4 column 3, lines 24-30,34-40; figures 1-3,5,7 column 5, line 26 - column 6, line 68 column 7, lines 19-29	1-21
A	GB 1 362 519 A (DELTA ENFIELD CABLES LTD) 7 August 1974 (1974-08-07) page 1, lines 16-77; figure 1 page 2, lines 31-70	1-21

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 June 2004	22/06/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Wengeler, H

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